Zero-Emission for California Ports (ZECAP)

The objective of this project is to validate the commercial viability of zero-emission hybrid fuel cell-electric yard trucks operating in a demanding, real-world cargo-handling application at the Port of Los Angeles. GTI and its technology partners, will deploy two hybrid fuel cell – electric yard trucks at the Port of Los Angeles, operated by TraPac for 12 months.

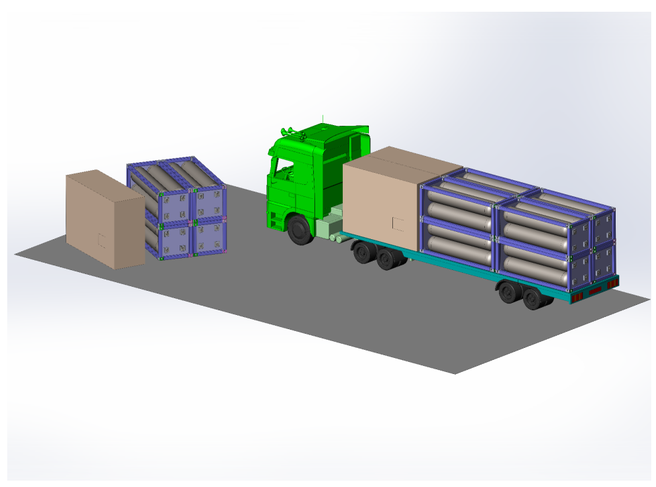
The project has been designed to minimize schedule and technology risks, while maximizing the amount of time the trucks will be in service and the amount of operating data they will generate. This is accomplished by leveraging existing fleet relationships, existing vehicle platforms, and an exceptional, results-focused team of partners.

Yard trucks are the single largest source of emissions in all classifications of cargo handling equipment, but are difficult to convert to zero-emission due to the unique duty cycle and operating environment. The project is intended to demonstrate to port terminal operators that fuel cell powered, zero-emission yard trucks are a safe, reliable, and operationally preferable solution to meet the port's clean air action plan.

Dates: 03/29/2019 – Spring 2021
Grantee: GTI
Partners: REV Group (Capacity), BAE Systems, Ballard Power Systems, ZEN Clean Energy Solutions, Hydrogen Technology Energy Corporation, Frontier Energy, TraPac

Grant Amount:

CARB Contribution:	$ 5,788,335
Matching Funds:	$ 6,267,078
Project Total:	$ 12,055,413



Vehicles/Equipment Funded

- Two 242,000lb GCVWR Capacity Trailer Jockey Series TJ9000 configured with:
  - BAE Systems HDS200 HydriDrive® powertrain. This mature proven system is capable of a peak propulsion power of 200kW (270 hp) and peak torque of 5200 Nm (3800 ft-lbs). During deceleration, the system will employ regenerative braking and capture energy in the battery pack for later use.
  - Ballard Power Systems FCveloCity®-HD85 proton exchange membrane fuel cell providing up to 85kW of zero-emission electrical power.
  - 20kg of onboard hydrogen storage at 350bar
- HTEC's stationarily-placed mobile tube-trailer hydrogen fueling system. The fueling station will store up to 400kg of hydrogen at 450bar and will provide 2kg/min fill without pre-cooling of the hydrogen. The station will be refilled via tanker delivery.

Lessons Learned

- The proposed project serves disadvantaged communities in the Port of Los Angeles area
- The greenhouse gas emissions reductions from this project are estimated at 44 metric tons CO2e/year
- The team is uniquely qualified to address the project challenges, such as permitting, first responder training and community outreach

Status Updates

- Project partners are poised to begin. Grant Agreement will be executed March 2019.